

EFFECT ON FUSIFORM RUST INCIDENCE
IN LOBLOLLY PINE PLANTATIONS
BY OPERATIONAL WEED CONTROL

by

Charles E. Affeltranger^{1/} and Stephen A. Covington^{2/}

Abstract

Fusiform rust stem cankering was not more common in stands treated with velpar for weed control at 1.1 and 2.2 kilograms per hectare applied in the first spring of outplanting in six plantations (aged 2-4 years). Branch cankering, however, was more common in stands with these treatments. Incidence of branch and stem cankering was not found to be high enough to affect current operational weed control practices which greatly increased diameter and height growth of loblolly pine.

INTRODUCTION

Reports of fusiform rust incidence in relation to weed control have come only from experimental field plots (Burton, 1984). In recent years liquid velpar (hexazinone) has been used in spring applications, both aerial and ground, to control a broad spectrum of weeds for loblolly pine release. Reports of greatly increased diameter and height growth from a corporation in Mississippi caused us to question whether an increase in fusiform rust might be expected in this fast growing succulent tissue. Loblolly pine 2 to 4 years old which have been treated with velpar in the first spring of outplanting have an unusual number of branches, and resemble Christmas trees.

^{1/} Pathologist, USDA Forest Service, Southern Region, State and Private Forestry, Forest Pest Management, Alexandria Field Office, Pineville, LA.

^{2/} Biological Technician, USDA Forest Service, Southern Region, State and Private Forestry, Forest Pest Management, Alexandria Field Office, Pineville, LA.

The purpose of this evaluation was to see if weed control permitted an increase in fusiform rust incidence or infection and whether the rust level with weed control would affect management practices.

METHODS

Sampling was systematic; every 2 to 5 chains 3 - 1/50 acre circular plots or two 25 or one 50 tree row plots were established perpendicular to the boundary. Random sampling of plantations was considered but not used due to a variation in topography which altered tree performance. Where topography was essentially uniform row plots were taken in adjacent treated and check areas.

Data collected were: diameters and heights (10-17 observations in the 25 and 50 tree row plots); the diameters and heights of all trees in 1 of the 3 - 1/50 acre plots; the number of stem and branch cankers on all trees surveyed; rust associated mortality; and, mortality from other causes.

Both treated and control plots were evaluated. Treatment was with liquid velpar at rates of 1.1 and 2.2 kilograms per hectare. Aerial and broadcast ground sprayed areas were sampled.

RESULTS

Results in Table 1 indicate that stem cankering in stands with weed control increased slightly in 2 of 6 plantations. Substantial increases in branch cankering were obtained in 5 of the 6 plantations. Very few trees had multiple branch cankers, and none had multiple stems.

As indicated by industry an overwhelming increase in diameter and height measurements occurred when weed control was used. Average height differences (except in one plantation) were at least one meter, and average diameter differences amounted to at least 0.8 inch (Table 1).

DISCUSSION

An increase in fusiform rust-caused branch cankering (20 percent in the most severely attacked plots treated with velpar) still does not justify a change in the corporate management practice of operational weed control. The level of branch cankering in treated plots coupled with the lack of stem cankering is considered acceptable since this light loss is being offset by increased growth. The increase in branch cankering is expected because treated trees are producing so much more succulent, susceptible tissue.

e 1. Average Fusiform Rust branch and stem incidence, number of stem and branch cankers and average heights and diameters on corporate operational weed control and check plots in Northeastern Mississippi and adjacent Alabama. Plantations are in flatwoods and hilly sites.

Location	Age	Treatment	Branch Cankering %	Stem Cankering %	# of Branch Cankers	# of Stem Cankers	Mean Ht. (m)	Mean Diam. (.1")
Kemper Co. 11N, 17E Secs. 22 + 23	3	Check (Aerial)	0	0	0	0	2.9	1.5
		2.2 kg velpar L./ha.	16	6	9	3	4.0	2.4
Kemper Co. 12N, 17E Sec. 24	4	Check	12	4	6	2	2.8	1.5
		1.1 kg velpar L./ha.	14	4	8	2	3.8	2.3
Kemper Co. 11N, 17E, Secs. 22 + 23	4	Check	0	4	0	2	2.6	1.2
		2.2 kg velpar L./ha.	6	2	4	1	3.6	2.1
Pickens Co. Alabama 18S, 16W, Sec. 36	2	Check	3	0	1	0	1.4	-
		1.1 kg velpar L./ha.	0	0	0	0	1.8	-
Lowndes Co. 17S, 18W, Sec.13	2	Check	0	0	0	0	0.7	-
		1.1 kg velpar L./ha.	9	0	3	0	2.1	-
Greene Co., Alabama 22S, 13W, Sec.20	4	Check	6	4	3	2	1.8	.7
		1.1 kg velpar L./ha.	24	6	14	3	3.3	1.8

REFERENCES CITED

- Burton, James D.; Snow, Glenn A. Triadimefon controls fusiform rust stem infection in intensively cultured slash pine. Abstracts; Southwide Forest Disease Workshop, University of Southern Mississippi, Gulf Park, Long Beach, Mississippi - January, 1984.

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Prepared by: Charles E. Affeltmeyer
Pathologist

Stephen A. Covington
Biological Technician

Approved by: Harvey V. Toko
for HARVEY V. TOKO
Staff Director
Forest Pest Management